Developing a Useful and Restoration-Based PCB Cleanup goal - a Multiple Lines of Evidence Approach for the Manistique Area of Concern

Amy Mucha (mucha.amy@epa.gov) (U.S. EPA GLNPO, Chicago IL)
Marc Mills (U.S. EPA ORD, Cincinnati OH)
Lawrence Burkhard (burkhard.lawrence@epa.gov) (U.S. EPA ORD, Duluth MN)
Karl Gustavson (Gustavson.karl@epa.gov) (U.S. EPA, Washington DC)
Charles Roth (U.S. EPA, Chicago IL)
John Canar (U.S. EPA, Chicago IL)
Scott Cieniawski (U.S. EPA GLNPO, Chicago IL)

Background/Objectives

Areas of Concern or AOCs are addressed by considering beneficial uses of the system and whether those uses are impaired and not based on risk assessments. One such impairment at the Manistique AOC is restrictions on fish consumption; which is present because the fish tissue residues are elevated for PCBs. Instead of employing a human health risk approach of setting fish tissue targets based on cancer risks, a multiple lines of evidence approach which centered on the ability to eventually remove that beneficial use impairment was utilized.

Approach/Activities

The removal criteria for the restrictions of fish consumption beneficial use impairment for this AOC was the basis for setting the fish target, both in terms of fish species considered and in residue targets. In addition, food chain modeling was done to better understand the relationship of the PCBs in sediment to the fish species assessed. Issues of bioavailability were also assessed using the fairly extensive site-specific bioaccumulation dataset that was available including riparian indicators, mussels and SPMDs. In addition, the impact and implementability of the range of cleanup goals were assessed using statistical and GIS methods.

Results/Lessons Learned

Working with multiple sets of data aided in understanding the range and variability of potential cleanup goals and overall added confidence in our ability to create a project that would meet AOC and restoration goals. In addition, mapping and estimating volumes and areas of various cleanup goals aided the project team in determining the most useful CUG for the site.